

# Notice of Allowability

Application No.

10/693,947

Examiner

An H. Do

Applicant(s)

SILVERBROOK, KIA

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Application filed on 28 October 2003.
2. ☒ The allowed claim(s) is/are 1-6.
3. ☒ The drawings filed on 28 October 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☒ Certified copies of the priority documents have been received in Application No. 10/302,606.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 28 October 2003
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
Stephen D. Meier  
Primary Examiner

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 28 October 2003 was filed and is being considered by the examiner.

### ***Allowable Subject Matter***

2. Claims 1-6 are allowed.
3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gordon et al (US 5,058,856) discloses a microminiature valve having radially spaced, layered spider legs with different coefficients of thermal expansion and heating elements to cause the legs flexed. Weber et al (US 6,003,977) discloses a configuration of a bubble valving system by the thermal process thereby improving the thermal efficiency of the process. Field et al (US 6,062,681) discloses a bubble valve that a liquid delivery channel and a localized heating arrangement. Khuri-Yakub et al (US 5,828,394) discloses a fluid drop ejector having one elastic wall membrane defining a nozzle and elements responsive to electrical signal for deflecting the membrane to eject droplets. Inui et al (US 5,719,604) discloses an inkjet head having a buckling body including a radially extending ribbed portion on its surface. Usui et al (US 5,255,016) discloses an inkjet head having a plurality of piezoelectric vibrating plates bending toward the nozzle to eject ink. Anagnostopoulos et al (US 5,812,159) discloses a printhead having a heater formed at the nozzle to separate the ink droplets.

***Reasons for Allowance***

4. The primary reason for the allowance of claim 1 is the inclusion of the limitations of a micro-electromechanical valve assembly for controlling a flow of fluid comprising an elongate actuator that is anchored at one end to the wafer substrate; and a closure member that is mounted on an opposite end of the elongate actuator, the actuator being configured to receive an electrical signal from the drive circuitry layer to displace the closure member between a closed position and an open position, wherein the elongate actuator is shaped so that, in a rest condition, the actuator encloses an arc, the actuator including a heating portion that is capable of being heated on receipt of the electrical signal to expand, the heating portion being configured so that, when the portion is heated, the resultant expansion of the portion causes the actuator to straighten at least partially and a subsequent cooling of the portion causes the actuator to return to its rest condition thereby displacing the closure between the closed and open positions. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

***Contact Information***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AD  
April 15, 2004



Stephen D. Meier  
Primary Examiner